## REMARKS

Claims 1-4, 6, 7, 11-16 and 49-53 are pending. With the previous cancellation of claim 2, 5, 8-10 and 17-48, the previous addition of claims 49-53 and 64, and the renumbering of claim 64 as the new claim 54, claims 1, 3, 4, 6, 7, 11-16 and 49-54 will be pending.

Claims 7, 12, 14, 15 and 64 (renumbered as new claim 54) have been amended per the suggestions of Examiner Steadan made in a telephone interview initiated by the Examiner on August 6, 2008.

STATUS OF CLAIMS AND SUPPORT FOR CLAIM CHANGES

1. (Pending) The amendment to claim 1 is supported, for example, by Examples 4 and 5 and Figure 3 of the specification. Five embodiments of the current invention are disclosed as recombinant gene constructs in Example 4 and demonstrated to synthesize farnesyl diphosphate having a shorter chain length than the native gene in Example 5 and Figure 3 of the specification. Col. 12, line 1 through Col. 14, line 16. The deletion of the comma after "amino acid sequence" is editorial and is performed in order to show the claim amendment as relative to claim 1 in the patent as required by MPEP 1453(IV).

2. (Canceled)

3. (Pending) The amendment to claim 3 is editorial and supported by the patent claim 3.

4. (Pending) The amendment to claim 4 is editorial and supported by the patent claim 4.

5. (Canceled)

6. (Pending) The amendment to claim 6 is editorial, supported by the specification at column 6, lines 22-34 and performed as suggested by the Examiner.

7. (Pending) The current amendment is supported by Example 5 and Figure 2. The current amendment is made as suggested by the Examiner to delete the process conditions used to determine the thermostability. With the deletion of the process conditions, the amended claim would not narrow in scope.

8-10. (Canceled)

11. (Pending) The amendment to claim 11 is editorial by replacing "an enzyme" with "the mutant prenyl diphosphate synthase".

12. (Pending) The current amendment to claim 12 is made as suggested by the Examiner. The amended claim 12 more directly recites the claimed RNA by replacing "transcribed from the DNA according to claim 11" with "encoding the mutant prenyl diphosphate synthase according to clam 1". The current amendment would not narrow the scope of the claim because the RNA transcribed from the DNA encoding the mutant prenyl diphosphate synthase is also he RNA encoding the mutant prenyl diphosphate synthase.

13. (Pending) The amendment to claim 13 is editorial by replacing "a" with "the".

14. (Pending) The current amendment to claim 14 is made as suggested by the Examiner. Claim 14 is amended to more directly recite the claimed subject matter by replacing "organism" with "cell". The current amendment would not narrow the scope of the claim because an isolated host organism transformed the mutant vector naturally involves transformation of the isolated host cell.

15. (Pending) The current amendment is editorial by replacing "host" with "isolated host cell". The amendment is made as requested by the Examiner. In order to culture a host, it naturally involves culturing the isolated host cell. Thus, the current amendment would not narrow the scope of the claim

16. (Pending) The amendment to claim 16 is editorial by replacing "an enzyme" with "the mutant prenyl diphosphate synthase."

17-48. (Canceled)

49. (Pending) Claim 49, a claim not found in the patent, is amended from claim 49 presented in the Response to Office Action filed June 29, 2007 by replacing "is modified by" with "is modified by only". Claim 49 presented in the Response filed on June 29, 2007 differs from claim 49 presented in the Response filed December 22, 2006 in that the claim recitations are recited in active voice instead of passive voice. The recitation "wherein said amino acid sequence modifications consist of threonine modified to phenylalanine at position 78 and histidine modified to alanine at position 81" is replaced with ", wherein the amino acid sequence of SEQ ID NO:1 is modified by replacing threonine with phenylalanine at position 78 and

replacing histidine with alanine at position 81". Support may be found, for example, in the substitution-mutated pBs-SacGGPS plasmid containing SEQ ID NO:9 disclosed in Example 4 and the functional enzyme expressed from the plasmid as disclosed in Example 5 and Figure 3.

50. (Pending) Claim 50, a claim not found in the patent, is amended from claim 50 presented in the Response to Office Action filed June 29, 2007 by replacing "is modified by" with "is modified by only". Claim 50 presented in the Response filed on June 29, 2007 differs from claim 50 presented in the Response filed December 22, 2006 in that the claim recitations are recited in active voice instead of passive voice. The recitation "wherein said amino acid sequence modifications consist of threonine modified to phenylalanine at position 78 and histidine modified to leucine at position 81" is replaced with ", wherein the amino acid sequence of SEQ ID NO:1 is modified by replacing threonine with phenylalanine at position 78 and replacing histidine with leucine at position 81". Support may be found, for example, in the substitution-mutated pBs-SacGGPS plasmid containing SEQ ID NO:10 disclosed in Example 4 and the functional enzyme expressed from the plasmid as disclosed in Example 5 and Figure 3.

51. (Pending) Claim 51, a claim not found in the patent, is amended from claim 51 presented in the Response to Office Action filed June 29, 2007 by replacing "is modified by" with "is modified by only". Claim 51 presented in the Response filed on June 29, 2007 differs from claim 51 presented in the Response filed December 22, 2006 in that the claim recitations are recited in active voice instead of passive voice. The recitation "wherein said amino acid sequence modifications consist of phenylalanine modified to tyrosine at position 77, threonine modified to phenylalanine at position 78 and histidine modified to leucine at position 81" is replaced with ", wherein the amino acid sequence of SEQ ID NO:1 is modified by replacing phenylalanine with tyrosine at position 77, replacing threonine with phenylalanine at position 78 and replacing histidine with leucine at position 81". Support may be found, for example, in the substitution-mutated pBs-SacGGPS plasmid containing SEQ ID NO:11 disclosed in Example 4 and the functional enzyme expressed from the plasmid as disclosed in Example 5 and Figure 3.

52. (Pending) Claim 52, a claim not found in the patent, is amended from claim 52 presented in the Response to Office Action filed June 29, 2007 by replacing "is modified by" with "is modified by only". Claim 52 presented in the Response filed on June 29, 2007 differs from claim 52 presented in the Response filed December 22, 2006 in that the claim recitations

are recited in active voice instead of passive voice. The recitation "wherein said amino acid sequence modifications consist of phenylalanine modified to tyrosine at position 77, threonine modified to phenylalanine at position 78 and histidine modified to alanine at position 81" is replaced with ", wherein the amino acid sequence of SEQ ID NO:1 is modified by replacing phenylalanine with tyrosine at position 77, replacing threonine with phenylalanine at position 78 and replacing histidine with alanine at position 81". Support may be found for claim 52, for example, in the substitution-mutated pBs-SacGGPS plasmid containing SEQ ID NO:12 disclosed in Example 4 and the functional enzyme expressed from the plasmid as disclosed in Example 5 and Figure 3.

53. (Pending) Claim 53, a claim not found in the patent, is amended from claim 53 presented in the Response to Office Action filed June 29, 2007 by replacing "is modified by" with "is modified by only". Claim 53 presented in the Response filed on June 29, 2007 differs from claim 53 presented in the Response filed December 22, 2006 in that the claim recitations are recited in active voice instead of passive voice. The recitation "wherein said amino acid sequence modifications consist of phenylalanine modified to tyrosine at position 77, threonine modified to serine at position 78, valine modified to isoleucine at position 80, isoleucine modified to leucine at position 84 and proline and serine inserted sequentially between position 84 and position 85" is replaced with ", wherein the amino acid sequence of SEQ ID NO:1 is modified by replacing phenylalanine with tyrosine at position 77, replacing threonine with serine at position 78, replacing valine with isoleucine at position 80, replacing isoleucine with leucine at position 84 and inserting proline and serine sequentially between position 84 and position 85". Support may be found for claim 53, for example, in the substitution-mutated pBs-SacGGPS plasmid containing SEQ ID NO:13 disclosed in Example 4 and the functional enzyme expressed from the plasmid as disclosed in Example 5 and Figure 3.

Claim 54. (New) The claim 64 added in the preceding Response to Office Action is renumbered as Claim 54 as suggested by the final Office Action. Descriptive support for claim 54 can be found in Example 5. The wording of the former claim 64 in the new claim 54 per the suggestion of the Examiner to delete the process conditions used to measure the synthesis of farnesyl diphosphate. With the deletion of the process conditions, the amended claim would not narrow in scope.

**Applicants' Statement of the Substance of Examiner Interview**

On August 6, 2008, Examiner Steadman telephoned the undersigned suggesting amendments to claims 7, 12, 14, 15 and 64. The Examiner indicated that because there were informalities that remained after the suggested claim amendments, the Examiner would send out a final Office Action. The undersigned indicated that the applicants would consider the suggested claim amendments when presented in writing along with the final Office Action.

**Informalities**

The application was objected for allegedly failing to present evidence to establish the ownership interest of the assignee. Applicants respectfully traverse the objection because the assignee did establish the chain of title of its ownership interest as evidenced by an assignment recorded in the USPTO at Reel 8647, Frame 0509. The ownership interest of the assignee is stated in the Reissue Declaration filed on July 21, 2001 (please see the Assent by Assignee section near the end of the Reissue Declaration, and also see Paragraph 13 of the Reissue Declaration).

**Reissue Declaration**

The reissue declaration filed on July 12, 2001 was objected to as defective for stating "duty to disclose under 37 CFR 1.56(a)" instead of "duty to disclose under 37 CFR 1.56". In addition, the reissue declaration was objected to because the reissue declaration partially relied on claims 19-34 added to the '832 patent, but claims 19-34 have since been cancelled. The defective reissue declaration will be corrected by submitting a substitute reissue declaration when the Examiner indicates that the reissue application is in a condition for allowance.

**Claim Objections**

Claim 64 was objected to as not numbered as claim 54. Per the suggestion of the final Office Action, claim 64 is now renumbered as the new claim 54. Withdrawal of the objection is requested.

**Rejection of Claims —Written Description**

Applicants respectfully traverse the rejections of claim 12, 7 and 16 as not meeting the written description requirement of 35 U.S.C. 112, first paragraph. The Examiner took a position the DNA further encompasses additional nucleotide sequence at the 5' and/or 3' ends. To advance prosecution, applicants have amended claim 12 per the suggestion of the Examiner made in the telephonic interview.

Withdrawal of the written description rejection is requested.

**Claim Rejections -- Enablement**

Applicants respectfully traverse the rejections of claim 12 as not enabled by the specification other than the Mutant enzymes 1-5 recited in claim 1. With the amendment to claim12 as suggested by the Examiner, applicants request withdrawal of the non-enablement rejection.

## CONCLUSION

At least in view of the above reasoning, the claims are believed to be in condition for allowance. The Examiner is invited to contact the undersigned to discuss any issues related to this application.

In the event that the filing of this paper is deemed not timely, applicants petition for an appropriate extension of time. The Office is authorized to charge any fees, including the extension fee, or credit any overpayment regarding this application to Kenyon & Kenyon LLP **Deposit Account No. 11-0600**.

Respectfully submitted,

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